CLAIMS

1. A packet transmission control system for managing traffic between at least two data networks, each of said networks comprising a plurality of host computers, communication lines and transmitted data packets, said system comprising:

at least one firewall, said firewall comprising:

hardware and software providing a non-redundant connection between said networks and serving to control packet transmission between said networks;

means for classifying data packets received at said firewall related to the consumption of at least one resource;

means for associating a maximum acceptable transmission rate with each class of data packet received at said firewall;

means for limiting the transmission rate from the firewall to the maximum acceptable transmission rate for each class of data packet; and

whereby, packet flooding and other over usage type distributed denial of service attacks cannot be effectively launched through said non-redundant connection.

2. A packet transmission control system, as described in Claim 1 wherein the means for classifying data packets received at the firewall further comprises:

identifying data packets as either of originating from locations within one of said networks for transmission to another of said networks and

forwarded by locations within one of said networks for transmission to another of said networks; and

whereby, said firewall will limit the transmission rate for data packets of each class from locations within one of said networks to provide proportionally fair forwarding service to other locations within said network that communicates through said non-redundant connection.

3. A packet transmission control system, as described in Claim 1 wherein the means for classifying data packets received at the firewall further comprises:

identifying data packets as either of data packets sent from one of said networks in response to identified data packets received from another of said networks and data packets not sent in response to said identified data packets; and

whereby, said firewall will limit the transmission rate for data packets transmitted from locations within one of said networks to another of said networks that are not sent in response to identified data packets received at the firewall from said other network.

4. A packet transmission control system, as described in Claim 1 wherein the means for classifying data packets received at the firewall further comprises:

identifying data packets as requests for services of at least one type requiring transmission of data packets from locations within one of said networks to another of said networks;

means for said firewall to measure the amount of service requested by each packet; and

whereby, said firewall will limit the transmission rate for data packets that are requests for services based upon the amount of service requested by those packets in order to limit the rate of usage of each type of service.

5. A packet transmission control system, as described in Claim 1 wherein the means for classifying data packets received at the firewall further comprises:

identifying data packets as responses to earlier service requests of at least one type from a location within one of said networks requiring transmission of data packets to another of said networks;

means for said firewall to measure the amount of service consumed in order to send each identified response data packet; and

whereby, said firewall will limit the transmission rate for data packets that are requests for services of each type based upon the amount of service delivered in response to previous requests.

6. A packet transmission control system, as described in Claim 1, further comprising:

means for storing and recalling past measurements of amounts of service provided for each type of service; and

whereby, said firewall will limit the transmission rate for data packets that are requests for each type of service to limit usage of each service over extended periods of time.